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## NEW SOUTH AMERICAN LAND SNAILS.

BY HENRY A. PILSBRY.

For most of the specimens described, the Academy is indebted to Dr. H. von Ihering, whose work in developing the zoölogy of southern Brazil continues with unabated vigor. Others were collected by Mr. J. B. Steere, in Peru, and submitted to me by Mr. H. E. Sargent.<sup>1</sup>

## STREPTAXIDÆ.

*Scolodonta interrupta* (Suter). Pl. XII, figs. 6, 7, 8.

Size and general form much as in *Zonitoides nitidus*. Umbilicus showing all the whorls within, its width contained nearly 4 times in the diameter of the shell. Surface glassy, subtranslucent white, scarcely showing growth-lines, but with several former peristomes at unequal distances, each indicated by a slightly sinuous distinct groove, with a whitish streak behind it. Whorls 5, slowly increasing, the last decidedly wider, rounded at the periphery and beneath; sutures moderately impressed. Aperture round-lunate, about one-third of the circle excised by the preceding whorl, slightly oblique; peristome a little sinuous, a trifle thickened within, unexpanded, the columellar margin a little dilated.

Alt. 3.5, greater diam. 6.5, lesser 5.6 mm.

Os Perus, Prov. Sao Paulo, Brazil (Dr. H. von Ihering).

A small whitish species, No. 1,186 of von Ihering's register.

*Happia Iheringi*, n. sp. Pl. XII, figs. 1, 2, 3.

Shell umbilicated, depressed, discoidal, translucent, coneous. Surface glossy, showing very slight, fine growth-wrinkles under the lens, and occasional white lines indicating the positions of former peristomes. Spire concave, very narrow, its width contained  $3\frac{1}{3}$  times in that of the shell. Whorls slightly exceeding three, the last very wide, rounded at the periphery, convex beneath, umbilicus narrow, rapidly contracting, its width contained  $4\frac{1}{2}$  times in the diameter of the shell. Aperture broadly lunate,

<sup>1</sup> Since this paper was in type, I have received an advance copy, without plates, of a paper by Mr. H. Suter, published in Portuguese, anticipating several of the species I had described as new. I have substituted Mr. Suter's names for my own.

deeply excised by the preceding whorl, a little oblique; peristome thin and simple.

Alt. 2, greater diam. 5, lesser 4.3 mm.

Os Perus, Prov. Sao Paulo, Brazil (Dr. H. von Ihering).

A small nautiloid species, No. 1,185 of Dr. von Ihering's catalogue. He notes (*in litt.*) that it has a small jaw, and a radula of typically carnivorous type, with the formula 13. 1. 13. The presence of a jaw suggests the pertinence of *Happia* to the family *Circinariidae*, rather than to *Streptaxidae*; but we are still profoundly ignorant of the anatomy of the South American *Streptaxes*.

**Happia vitrina** (Wagner).

Cubatao, Alto do Serra, Sao Paulo (No. 1,184 of Dr. von Ihering's register). It is *Streptaxis tumescens* of Suter.

Another *Happia*, No. 807 of von Ihering's register, is somewhat like *H. vitrina* (Wagner), but with wider, less depressed spire, wider umbilicus and rougher, wrinkled surface; diam. 15 mm., habitat, Piquete, Sao Paulo. This is evidently undescribed, but as the lip of the single specimen sent is broken, I defer its formal characterization. It is No. 71,247 Coll. A. N. S. P.

**Guppya seminlini** (Moricand).

Os Perus, Sao Paulo (No. 1,183 of von Ihering's register).

Dr. von Ihering remarks (*in litt.*) that he can see no reason for referring *seminlini* to a different genus from *fulvus*; and while it is customary to separate the tropical and South American species of this form as a genus *Guppya*, it must be acknowledged that there are absolutely no differential generic characters *in the shells* between the two species mentioned above. The typical forms of *Guppya* have a fleshy prominence or horn above the caudal gland, which, so far as I know, is wanting in the North American and Palæarctic *Conulus*.

However, the name *Conulus* is preoccupied by Rafinesque; and although his *Conulus* is a synonym of *Conus* Linné, still the name cannot be revived. It is also in use in Echinodermata. Under these circumstances, it seems that *Guppya* will stand as the generic name for the tropical and South American species. A rapid survey of the South American species in the collection of the Academy shows that they are more numerous than the litera-

ture would indicate, and often various forms appear under one or another of the older names. The true *seminlini* has an excessively minute sculpture giving a silky lustre to the upper surface, while the base is glossy, with extremely fine, close, superficial circular striæ. A specimen measures: alt. 3.7, diam. 4.6 mm, whorls  $5\frac{1}{2}$ .

A smaller species or variety, alt. 2, diam. 2.6 mm., from Os Perus (No. 1,182 of von Ihering's register), is allied to *seminlini* Moric., *paraguayana* Pfr., *anguina* Anc. and *martinezi* Hid. The form is much as in *seminlini*; whorls a trifle over 5, the last angular, surface with a silky lustre above and a band of the same just below the periphery, just as in "*Conulus*" *chersinus* var. *polygyratus* Pils. The rest of the base is glossy, but under sufficient magnification shows spiral striæ in places. This may be called var. *subseminlini*.

#### ENDODONTIDÆ.

**Stephanoda pleurophora** (Moricand). Pl. XII, figs. 4, 5.

This species, described from the Province of Bahia, has been found by von Ihering at Sao Paulo. As the original description and figures leave much to be desired, new figures are here given.

There are  $4\frac{1}{2}$  whorls, the earlier one and one-half smooth, the rest with raised, lamellar rib-striæ, which are sinuous, and about 8 to a millimeter on the front of the last whorl, becoming more crowded near the aperture. The width of the umbilicus is contained nearly four times in the diameter of the shell. Alt. 2.3, diam. 3 mm.; width of umbilicus .5 mm.

The jaw and radula have been examined by Dr. von Ihering. The former is but little arcuate, composed of twenty well-united narrow plates, being like that of *Charopa*, *Endodonta*, etc. The radula has the formula 15. 1. 15, the central teeth tricuspid, with the middle cusps much shorter than the basal plates; laterals also tricuspid, the middle cusps longer than the basal plates; marginals wide, multicuspid, the cusps being split into some five acute denticles.

**Stephanoda patagonica** (Suter). Pl. XII, figs. 9, 10, 11.

Shell minute, depressed, subdiscoidal, umbilicated, the width of the umbilicus contained nearly four times in the diameter of the shell. Spire slightly convex; whorls  $3\frac{3}{4}$ , convex, separated by deep sutures, the earliest  $1\frac{1}{2}$  whorls smooth, the rest finely and densely

rib-striate, the striæ rather low, straight, about 20 in the space of a millimeter on the last whorl; last whorl rounded at periphery and below. Aperture rounded-lunate, slightly oblique.

Alt. 1.15, greater diam. nearly 2 mm. width of umbilicus .5 mm.

Santa Cruz, Patagonia (No. 1,181 of Dr. von Ihering's register).

The specimens of this very minute species were obtained from dried mud. It is smaller than any other described form from the region.

#### HELICIDÆ.

##### *Polygyratia Sargenti* n. sp.

Shell planorboid, flat above, having a deep, broadly funnel-shaped or conical umbilicus below; yellowish-corneous, subtranslucent, glossy; finely striatulate, and showing some faint spiral lines, visible only under a strong lens, above. Whorls  $7\frac{1}{2}$  to 8, the first one wider than the next, very closely coiled and slowly widening, the last whorl deviating and somewhat descending toward the aperture, rounded peripherally and below, flattened and impressed behind the upper lip. Umbilicus half the width of the shell, or a little less. Aperture irregularly bilobed, quite oblique; peristome slightly expanded, more so below, a little thickened, the upper margin straightened and bearing a conic median tubercle; outer margin arched, basal margin nearly straight or only weakly arcuate; the terminations widely separated.

Alt. 11, diam.  $3\frac{2}{3}$  mm.

This species is allied to *P. Ortoni* Crosse, from which it differs in the smaller size, paler color, decidedly narrower and more conical umbilicus, and greater height compared to the diameter. It has one or two whorls less than specimens of *P. Ortoni* before me from Boya, Peru. The aperture resembles that of *P. Ortoni*.

It is named in honor of Mr. H. E. Sargent.

##### *Polygyratia affinis* n. sp.

Shell planorboid, flat above, and somewhat concave in the middle, having a broadly conic umbilicus below, pale yellow, very glossy, faintly striatulate whorls  $8\frac{1}{2}$ , excessively closely convoluted, the last whorl about four times as wide as the preceding, rounded at the periphery, tangentially deviating and somewhat descending near the aperture. Aperture quite oblique, deeply lunate, the

peristome simple and unexpanded, the upper margin somewhat straightened, sloping, outer and basal margins arcuate.

Alt. 4, diam.  $11\frac{1}{2}$  mm.; width of umbilicus 5 mm.

Peru. Coll. A. N. S. P. No. 57,671.

This species was in the collection of the Academy under the name *H. stenogyra* Pfr. It is nearly allied to *P. polycycla* Morel., but is less depressed, the last whorl wider, and the umbilicus is much narrower. In *P. systrophia* the last whorl, seen from above, is much narrower. *P. stenogyra* is an allied but larger and otherwise differing species.

***Polygyratia stenostrepta* var. *declinata* n. var.**

Similar to *stenostrepta*, but with the last whorl much more deeply deflexed anteriorly, the suture terminating at the middle or lower third of the height of the whorl; groove above the upper lip strongly developed; basal lip well expanded. Whorl  $9\frac{2}{3}$ .

Alt.  $4\frac{1}{2}$ , diam. 13 mm.

Alt. 4, diam.  $11\frac{1}{2}$  mm.

Peru. Types No. 78,140, Coll. A. N. S. P.

***Epiphragmophora oresigena* var. *bernardius* v. Ihering, n. var.**

Shell similar to *E. oresigena* (Orb.), but smaller, and lighter colored, yellow or greenish-yellow, with three blackish-brown bands, two above the periphery, one wider band on the base. Whorls  $4\frac{1}{2}$ , the last subangular at the periphery; surface lirate-malleate, the wrinkles tangential to the last whorl of the suture. Aperture white or purplish, and banded within, the lip white; umbilicus partly or nearly covered.

Alt. 17, diam. 30 mm.

Alt. 16, diam. 28 mm.

Serra da Bocaina, State of Sao Paulo, Brazil (Dr. H. v. Ihering).

The typical *E. oresigena* is a larger, heavier and darker shell from the northeastern slope of the eastern cordillera and the province of Yungas, Bolivia. It will probably prove to be a variety of the still larger *E. audouinii* Orb., from the same region. The types of var. *bernardius* are No. 71,253 Coll. A. N. S. (No. 872 of Dr. von Ihering's register).

***Strophocheilus oblongus* (Müller).**

The geographic range of this species is greater than that of any other *Strophocheilus*. In the north there is one insular variety,

*albolabiata* E. A. Smith,<sup>2</sup> of Tobago. In the south there are several varieties, as follows:

Var. *crassus* Albers. Parana region (Orbigny, Gülich).

Var. *alba* Smith. As large as the type, but pure white, lip rose-pink. Pampa Ruis, Bolivia (Orbigny).

Var. *sanctepauli* v. Iher. and Pils., n. v.

Very slender and elongated, not compressed between face and back, with narrow, produced spire. Substance of the shell reddish, with light subsutural band; cuticle persistent; surface typically costulate, but later two whorls without microscopic granulation. Aperture small, half the shell's length, pink within; peristome brilliant rose colored. Whorls 6. Alt. 84, diam. 43 mm.; alt. of aperture 43 mm.

Botucatu, Sao Paulo, Brazil (von Ihering).

This variety resembles *S. santacruzii* somewhat.

Dr. W. H. Rush found the typical form of *oblongus* at Fray Bentos, on the Uruguay river, and with it a small, solid race with obtuse spire, and small, brilliant rose-lipped aperture.

***Strophocheilus paranaguensis*** Pils. and v. Iher., n. sp. Pl. XI, figs. 1, 2.

Shell ovate, *decidedly compressed dorso-ventrally*, moderately solid, *the spire short*, obtuse. Shell substance dull pink, with a pale band below the sutures; cuticle mainly retained on the later two whorls, yellow below the sutures and back of the outer lip, *elsewhere yellowish-chestnut, with rather numerous, narrow, obliquely longitudinal chestnut streaks*. Surface moderately shining, irregularly, *strongly wrinkle-costulate*, as in *S. oblongus*; showing under the lens a microscopic granulation (similar to that of the spire of *S. oblongus*), which is largely or entirely lost on the last half whorl. Nepionic whorls finely costulate, as in *S. oblongus*. Whorls 5½, the earlier five regularly and moderately widening, with slightly oblique sutures, the last half whorl (in a dorsal view) rapidly descending, its *suture extremely oblique*. Aperture somewhat oblique, whitish inside; peristome well expanded, brilliant rose-colored; columella with a moderate fold.

<sup>2</sup> The synonymy of this variety is as follows:

*Borus oblongus* var. *albus* Müll., W. G. Binney, Ann. N. Y. Acad. Sci., iii, p. 115 (jaw and teeth; shell not described).

*Bulinus oblongus* var. *albolabiatus* E. A. Smith, Proc. Malac. Soc. Lond., i, p. 137 (1894).

*Strophocheilus oblongus* var. *tobagoensis* Pilsbry, Man. of Conch (2 Ser.), x, p. 30, Pl. 14, f. 70 (1895).

Alt. 92, diam. maj. 55, min. 47 mm. ; length of aperture 62 mm.  
Paranagua, coast of Prov. Parana, Brazil.

With the sculpture of *S. oblongus*, this species unites the contour of *S. ovatus*. It differs from *oblongus* in the streaked cuticle, dorso-ventral compression, short spire, and very oblique last suture. It is more obese than *S. granulatus* Rang, with less pronounced granulation, coarse surface costulation, and closer apical riblets.

***Strophocheilus globosus*** (Martens).

The locality of this species has hitherto been unknown. It occurs subfossil at Montevideo, Uruguay, whence specimens have been sent by Dr. von Ihering. It will doubtless be found living in the same region. The apical sculpture is that of the *S. oblongus* group. Some specimens are so globose as to suggest the European *Helix aspersa*.

#### BULIMULIDÆ.

***Bulimulus Steerei*** n. sp.

Shell umbilicate and *broadly rimate*, ovate-conic, with *straight-sided spire* and convex last whorl, *the base angular around a large umbilical excavation*; solid and strong, opaque soiled white, with indistinct brown stains in most specimens, and usually an indistinct whiter girdle at the periphery, the apex white. Surface lustreless, *finely wrinkled longitudinally, and densely granose in spiral series*, as in *B. proteus* or *B. Montezuma*; the granules small but strongly expressed. Apex obtuse, earlier  $1\frac{1}{2}$  whorls strongly vermiculate-wrinkled, the wrinkles anastomosing and largely transformed into a netted pattern. Sutures not impressed, being filled by the peripheral keel of the young shell. Whorls  $6\frac{1}{2}$ , the first two convex, *those following almost completely flat*, the last whorl convex, without trace of a peripheral angle or carina, usually ascending in front. Aperture subvertical, ovate, built forward nearly to the level of the ventral convexity, brown tinted within; *peristome broadly expanded, thickened within*, brown or white, *acute at the edge*. Columella oblique, *making an angle with the basal margin*; its edge dilated; parietal callus moderate or slight, whitish.

Alt. 38, diam. 21, longest axis of aperture  $20\frac{1}{2}$ , greatest width  $13\frac{1}{2}$  mm.



Alt. 35, diam. 20, longest axis of aperture 21, greatest width,  $13\frac{1}{2}$  mm.

Alt. 36, diam. 19, longest axis of aperture 20, greatest width,  $12\frac{1}{2}$  mm.

Peru, J. B. Steere expedition. Types in Coll. A. N. S., No. 78,144, and Coll. University of Michigan.

The granose surface gives this species some resemblance to *B. Proteus*, but it differs in the characters of the aperture and the flat whorls of the spire. The young and half-grown shell is evidently acutely carinate at the periphery. In this respect *B. Steerei* is like *B. Cora* Orb., and other forms referred to the genus *Neopetræus*; but it has the apical sculpture of a true *Scutalus*, wholly unlike that of *Neopetræus*.

The deeply excavated tract behind the columellar lip leads to a tubular umbilicus, which is evidently large and open in the immature shell, but is more or less constricted in most adults.

***Bulimulus hæmatospira* n. sp.**

Shell rimate, *pillar-shaped*, the last 4 whorls of about equal diameter and white, those above tapering and deepening to a blood-red color; thin, but moderately strong, opaque, nearly lustreless. Apex obtuse, the earlier  $1\frac{2}{3}$  whorls convex and sculptured with delicate, spaced and straight longitudinal riblets; next whorl or two nearly smooth, with merely some series of long granules; longitudinal ribs gradually appearing; the white, cylindrical portion of the shell being sculptured with strong, arcuate ribs, narrower than their intervals, and several spiral series of long, narrow, crowded granules. Whorls  $8\frac{1}{2}$  to 9, the earlier convex, the later 3 or 4 somewhat flattened. Aperture small, oval, longer than wide, white within; peristome simple and unexpanded.

Length 16, diameter above the aperture 3, length of aperture 3 mm.

Length 16.3, diameter above the aperture 3, length of aperture 3 mm.

Length 15, diameter above the aperture 3.1, length of aperture 3 mm.

Locality unknown, probably Peru. Types in Coll. A. N. S., No. 78,135, and in Coll. University of Michigan.

This beautiful little *Bulimulus* would be considered a *Peronæus*, from its narrow form and calcareous texture, were it not for the

apical sculpture, which is like *Nasiotus*, *Protoglyptus* and *Orthotomium*. This shows it to be not a *Peronæus*, but a stock of different ancestry, parallel to that group, such as I have shown to exist in various Bulimulid groups.

*Odontostomus kühnholtzianus* (Crosse). Pl. XII, fig. 12.

An enlarged view of the aperture is given to show the arrangement of teeth. The specimen figured is from Montevideo, collected by J. Arechaveleta, Director of the National Museum of Montevideo (No. 1,015 of Dr. von Ihering's register, 78,037 Coll. A. N. S. P.).

#### HELICINIDÆ.

*Helicina ignapensis* n. sp.

Shell depressed, the *diameter about twice the altitude, lens-shaped, acutely keeled*; very pale yellow, the apex and basal callus white. Surface lightly striate, irregularly grooved and finely striate spirally, this sculpture weaker on the last whorl, finer beneath. Spire low conic; whorls 5, the first smooth, the last slightly convex, becoming concave above the acute peripheral keel. Base evenly convex. Aperture oblique, subtriangular, white within; peristome rather broadly reflexed, white, angular at the termination of the peripheral keel; the upper margin nearly straight, basal margin moderately arcuate; columella very short, *vertical, produced below in a projecting angle*. Callus thin, white.

Alt. 8.5, diam. 16 mm.

Operculum scarlet outside, fading to whitish at the nucleus, lightly striate, irregularly triangular, the nucleus marginal, nuclear edge straight, with reflexed scarlet margin.

Iguape, S. Paulo, Brazil. Type from Dr. H. von Ihering, No. 78,028, Coll. A. N. S. P. (940 v. Ihering's register).

This species resembles *H. carinata* Orb., *angulata* Sowb., and *gonochila* Pfr. in the salient angle or tooth in which the columella terminates below; but it is a far larger and more depressed shell. In general form it is almost exactly like *H. caracolla* Moric., which differs in completely lacking any trace of an angle at the base of the columella.

The sculpture above seems to consist of rather low, flat liræ, over which much finer spiral striæ run. This is best developed on the next to the last whorl.

***Helicina inæquistriata* n. sp.**

Shell thin, subglobose-depressed, rather bluntly carinated; varying from a dull reddish color to pale sulphur yellow. Surface dull, sculptured with fine growth lines and numerous unequal, low and flattened spiral liræ, with a sculpture of fine spiral striæ over them, giving the appearance of groups or fascicles of more prominent, alternating with bands of less prominent spiral striæ. Spire low conic; whorls  $4\frac{1}{2}$  slightly convex, the last decidedly angular at the periphery, convex, not descending anteriorly. Aperture subtriangular, the outer angle rounded; peristome white, narrowly subreflexed, its face thickened in old specimens; upper margin but slightly arcuate, basal margin strongly arched, forming a right angle with the straight and vertical columella, the base of which is outwardly angular. Basal callus rather small, whitish.

Alt. 7, diam.  $9\frac{1}{2}$  mm.

Raiz da Serra, Sao Paulo, Brazil. Types from Dr. H. von Ihering, No. 78,038 Coll. A. N. S. (938 von Ihering's register).

APPENDIX: DESCRIPTION OF A NEW STROPHOCHEILUS, BY  
DR. H. VON IHERING.

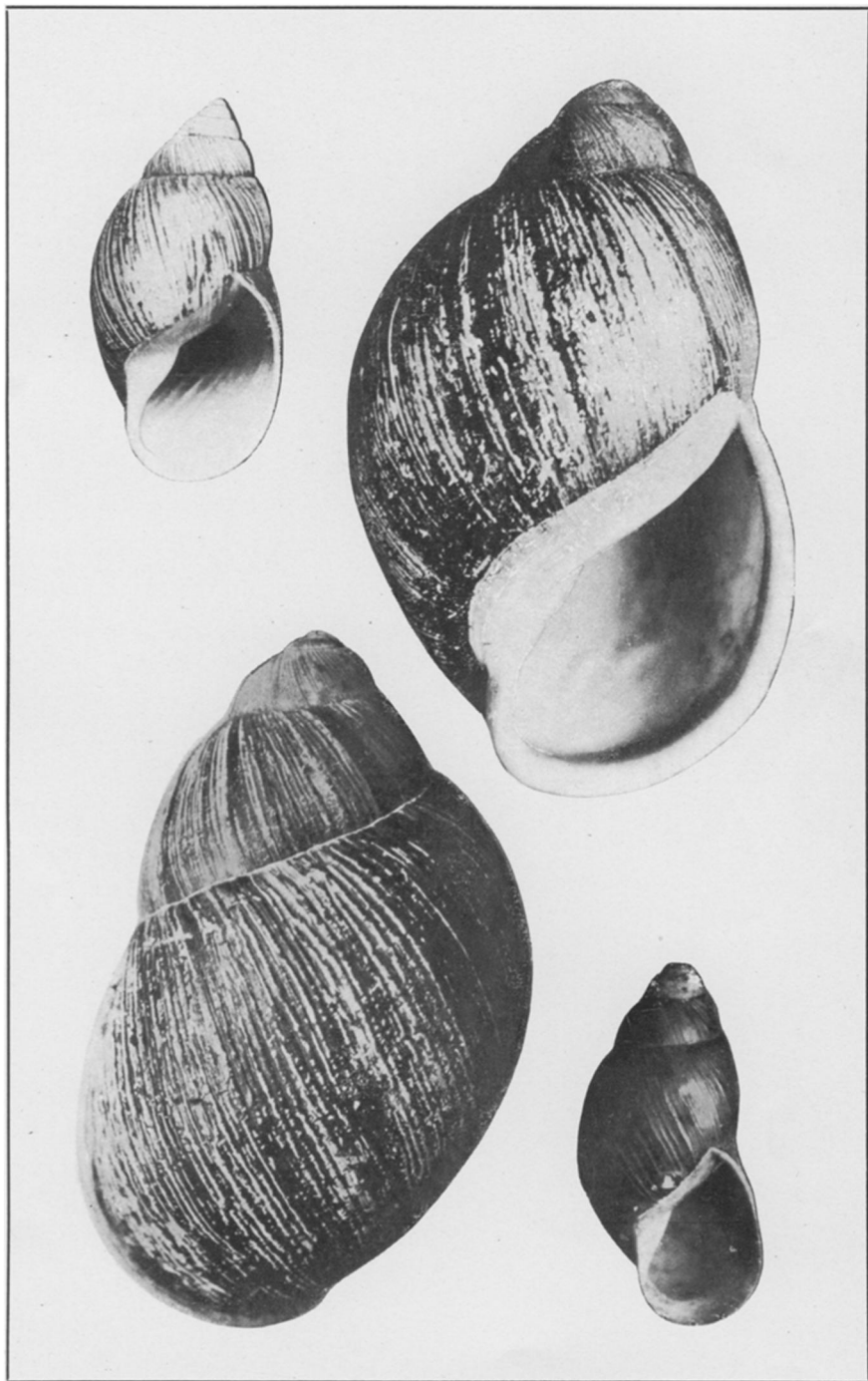
***Strophocheilus Pilsbryi* n. sp. Pl. XI, fig. 4.**

Shell perforate, oblong, moderately solid, chestnut brown, with a blackish line followed by an ill-defined yellow band below the suture; irregularly plicatulate and beautifully granose microscopically throughout, the granulation barely visible to the naked eye, and arranged in regular spiral series; spire thick, obtuse. Whorls 5, the first one planorboid, the next tumid above; last whorl oval, convex, its later half more descending, shortly ascending at the aperture. Aperture ovate, bluish within; peristome reflexed, red; columella oblique and straight above, concave below, its margin dilated above, almost closing the narrow perforation.

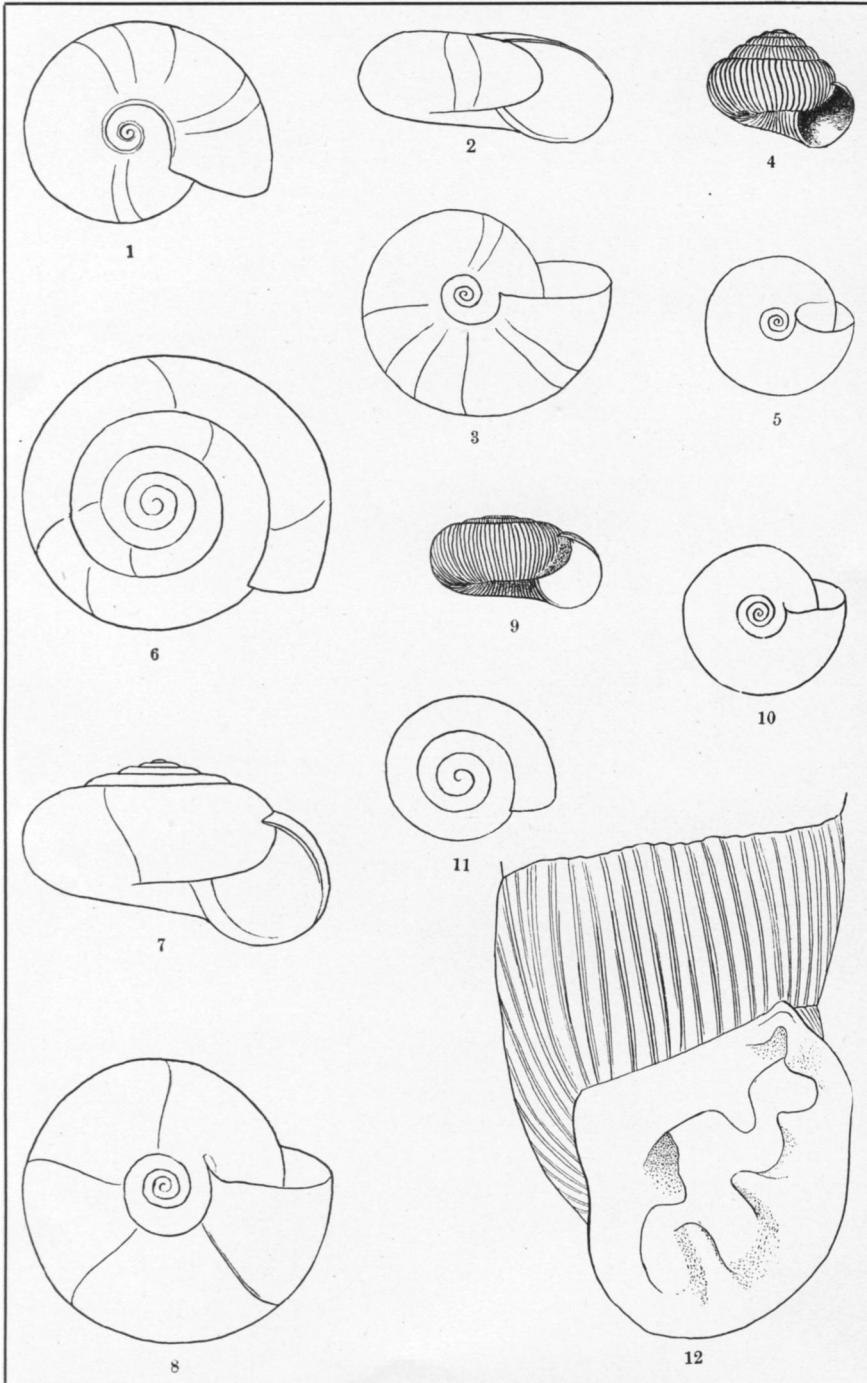
Length 48, diam. 24 mm.; aperture 25 mm. long.

Piquete (Serra da Mantigueira), Sao Paulo, Brazil.

This species seems to be allied to *S. rhodocheilus* (Reeve), but has not the color-pattern or columellar fold of that species, the aperture is smaller, and the surface irregularly plicatulate as well as granulous.



PILSBRY. SOUTH AMERICAN LAND SNAILS.



PILSBRY. SOUTH AMERICAN LAND SNAILS.